BULLETIN 546 JANUARY, 1935

Cream Marketing in Southwestern Ohio

C. G. McBride and R. W. Sherman

OHIO
AGRICULTURAL EXPERIMENT STATION
Wooster, Ohio

This page intentionally blank.

CONTENTS

This page intentionally blank.

CREAM MARKETING IN SOUTHWESTERN OHIO

C. G. McBRIDE AND R. W. SHERMAN

INTRODUCTION

PURPOSE AND PROCEDURE

This study is an intensive analysis of the methods now in use in assembling cream for manufacture into butter in a limited area in southwestern Ohio. The area chosen included the counties of Brown, Highland, Clinton, Fayette, and Pickaway; most of Adams, Greene, Fairfield, and Ross; and parts of the adjacent counties—Franklin, Licking, Hocking, Vinton, Pike, and Madison. No attempt was made to study prices except as price differentials were found to exert a direct influence upon the method of assembly. In this area there has been a very extensive development of cream truck routes in recent years. In spite of this trend to cream trucking it still remains one of the most intensive cream station areas in Ohio.

The study included both stations and cream routes. No efforts were made to contact the few scattered farmers still shipping cream direct to factories by means of public carriers. The data collected covered type of assembling agency, location of the factory receiving the cream, length of time the station or route had been operating, changes that had occurred as a result of competition, shift to sale of whole milk, combinations of cream gathering with other commodities, and cooperative marketing practices.

The data were obtained by the survey method. Schedules were filled out from personal contact with cream station operators and truck drivers. Cream procurement managers of the larger buying plants were interviewed. Routes covered by cream trucks were plotted, but it was found impractical to map exact locations of individual farm pick-ups.

HISTORICAL BACKGROUND

The creamery or butter factory is an American institution. The first one was built in Orange County, New York, in 1856. The butter factories followed the cheese factories as the normal economic development. There was a moderate beginning in the Middle West between 1865 and 1890, but the heavy wave of creamery building swept over this area in the decade 1890-1899.

The creameries in this earlier period were of three kinds as to type of operation: (a) whole milk creameries, (b) separator creameries, (c) gathered cream factories.

The whole milk creamery purchased the milk outright, set it for skimming on the gravity plan, and disposed of the skimmilk. This type soon passed out of existence because it was lacking in efficiency.

The separator creamery received the milk either at the factory or at a skimming station, separated it, and returned the skimmilk to the farmer if he desired it. This type prevailed in the period around 1900 in this area. A map prepared in 1903 by Professor J. W. Decker, of the Ohio State University, for the Ohio Dairymen's Association showed nine creameries and six skimming stations in the area involved in this study.

The cream gathering plan originated in Wisconsin, was first widely adopted in Iowa, and became the prevailing plan in New England. In this plan the cream was separated on the farm. Before the introduction of farm separators, the buying company prescribed exactly the procedure to be followed and the cream was purchased by measure. The Babcock Test displaced this plan, and the farmer was then left free to choose his method of separating. This is the plan now in use throughout Ohio.

Professor H. E. Van Norman, writing about Indiana creameries in 1901, said: "The use of hand separators on the farm and delivery of cream only to the creamery has begun but is not largely used yet."

Early literature on the creamery movement indicates that farmers saw in the cream gathering system two important advantages—namely, less exacting labor and greater financial returns. The following comment in the report of the Bureau of Animal Industry for 1895 and 1896 indicates this point of view: "It is reasonable to believe, and has been abundantly proved, that if the milk and cream produced on a hundred farms is taken to one place and made into butter, the work can be done at less cost per pound than if made on the hundred farms. And if the factory is well equipped and well conducted, with an expert buttermaker, the butter is certain to be of higher quality than the average of the butter from the hundred farms."[1]

TRANSPORTATION OF CREAM BY RAILROAD

The area studied was traversed by a rather complete network of railroads by the time the creameries were established. The important steam roads and some of their larger contact points in 1898[2] were as follows:

Pennsylvania Railroad—Lancaster, Circleville, Washington Court House, Wilmington, Cincinnati.

Baltimore and Ohio Railroad—Chillicothe, Hillsboro, Washington Court House, Wilmington, Blanchester, Cincinnati.

Cincinnati, Portsmouth and Virginia Railroad—Hillsboro, Batavia, Peebles, Portsmouth.

Cincinnati, Georgetown and Portsmouth Railroad—Georgetown and West Union.

Cincinnati, Hamilton and Dayton Railroad—Xenia, Washington Court House, and Chillicothe.

Ohio Southern Railroad—South Charleston, Washington Court House, Bainbridge, Waverly.

Norfolk and Western Railroad—Columbus, Circleville, and Portsmouth.

In the early period of the cream gathering creameries much cream was transported over these railroads. Some was sent direct by the producer and some was assembled in the cream station and then shipped by rail to the factory. In the period 1900 to 1915 railroads catered to the traffic in sour cream and the system was adjusted to rail transportation.

[1]H. E. Alvord. Creameries or Butter Factories. Report of the Bureau of Animal Industry for 1895-1896.

[2]The Ohio Railway Report for 1898.

PRODUCTION OF COMMERCIAL BUTTERFAT AND FARM BUTTER, 1919 AND 1929

Census figures indicate the intensity of sour cream and farm butter production in the area studied. They are given by counties in Table 1.

There was little change from 1919 to 1929 in the total production of the area in these two forms combined. There was, however, a pronounced shift from butter churned on farms to the sale of cream as butterfat. This shift was coincident with intensive competition for cream on the part of creameries. In a region devoted largely to livestock and general farming, as this area is, the churning of butter on the farm persists to a considerable degree even under the most intensive solicitation on the part of cream buyers.

TABLE 1.—Cream Sold as Butterfat and Butter Churned in 1929 and 1919 in Counties Involved in Study

Source—United States Census

County	1929		1919	
	Cream sold as butterfat (Pounds fat)	Butter churned on farm (Pounds)	Cream sold as butterfat (Pounds fat)	Butter churned on farm (Pounds)
Adams	694,653	146,251	344,896	454,313
Brown	1,051,716	161,821	818,282	302,703
Clinton	467,105	140,628	471,446	225,830
Fairfield	1,028,330	226,883	687,759	393,974
Fayette	275,552	93,392	214,626	159,492
Franklin	433,798	266,192	191,414	496,184
Greene	275,308	67,388	380,187	138,970
Highland	718,597	193,071	506,386	290,526
Hocking	314,861	151,931	154,485	320,478
Licking	809,171	262,468	620,405	477,202
Madison	284,145	56,928	166,500	107,199
Pickaway	521,822	122,442	327,488	259,191
Pike	233,077	96,610	85,547	217,851
Ross	384,807	142,316	137,975	402,487
Vinton	217,482	83,795	114,185	223,411
Total	7,720,424	2,212,116	5,221,581	4,469,811

CREAM ASSEMBLING SYSTEMS

Three methods of assembling cream at factories have been in general use in the area for several years: (a) direct shipment, (b) cream stations, and (c) cream truck routes. Some confusion of terminology has developed because of various methods of paying for butterfat. In this discussion the distinction will be drawn strictly upon the basis of the method of assembling cream from the farm as the starting point.

DIRECT SHIPMENT

In this study the term "direct shipment" is used to apply when the cream was delivered by the producer to the buying plant, either by direct haul on his part or by the use of a common carrier, such as a railroad or a trucker licensed under the Public Utilities Commission.

This method of assembling was of minor importance in this area at the time of the study. The territory was so completely covered by other more convenient means of marketing that there was little chance of its being chosen as the method. In most instances price competition by stations and cream routes had eliminated any advantage in price that might have existed in direct shipment.

In railroad delivery direct shipment may be on delivered or on track basis. On the delivered basis the patron pays freight or express from his local loading point to the city in which the plant is located. The buyer picks up the cream at the railroad platform or pays whatever cartage costs there may be from the platform to the plant. In the case of track shipments the buying company pays the transportation charge from the shipper's railroad point and stands the cartage costs, if any, at the receiving point.

When shipments are by common carrier trucks, the farmer delivers his cream to a road stand or some designated pick-up point. Trucking charges are deducted from the delivered price. The truck may make delivery at the plant platform or at a trucking terminal. If the cream is unloaded at a terminal, the buyer stands any further cartage charges that may accrue.

THE CREAM STATION

The typical cream station is a local branch office of the buying concern. The station operator is under contract with the buying company. He or she receives the cream of the patron, weighs and tests it, and writes a check against an account provided by the company.

The station has a distinct advantage over the direct shipment by common carrier in the personal contact between the station operator and the patron.

The station is often connected with some other business, such as a grocery or general supply store, and the delivery of cream is only a part of the business transactions between the two parties. The personal contact also affords an opportunity for the station operator to advise with regard to the handling of the cream on the farm and enroute to the station.

There are some disadvantages to the cream station as an assembling agency: It is expensive in general overhead, the flow of business is uneven, and there are sharp peaks in receipts on Saturdays that tax the ability of the operator.

The organization finds difficulty in avoiding wide differences at times in the tests of the station operators as compared with the composite test of all the cream received from the station. There is always the temptation on the part of the operator to give the patron a high reading for competitive reasons. It is now the general practice of buyers to make the operators stand shortages due to over-reading of tests.

The maintenance of a large number of stations of very small volume is a practice that creameries are having difficulty in defending as economically sound. This phase of the question will be discussed later.

CREAM TRUCK ROUTES

The gathering of cream on routes antedates the coming of the gasoline truck. In several parts of Ohio in the earlier period of the cream gathering system there were what was known as bucket routes. The gathering was done

by horse-drawn wagons, and the cream after being measured or weighed was dumped into large containers. After testing was introduced, the sample was taken before dumping and the test was made at the plant.

The present trucking system is based upon individual containers. The weighing and testing is done at the manufacturing plant or the cream station and the can is returned at the next trip. Sometimes the check is delivered by the trucker on his next trip and sometimes it is mailed directly to the patron.

The destination of the cream truck route is sometimes the creamery and sometimes a station or concentration point. The essential point of distinction is that the cream truck goes to the farm for the cream. There is no distinction as far as service to the farmer is concerned between routes going direct to the creamery and those going to stations or concentration points. In each case the truck picks up the cream at regular intervals and the farmer receives his check and returned can at a later date.

COMBINATIONS OF METHODS

Several variations and combinations of the methods above described have come into existence. One of the most widely known of these was the Georgetown Plan, named for Georgetown, Kentucky. By this plan the local cream station received, weighed, and sampled the cream but did not test it or write the check. The inconvenience of the delay in receiving the check was compensated for by paying the delivered direct shipper price less the 10-gallon can rate for transportation. Many firms were opposed to this plan and considered it a subterfuge to pay creamery f. o. b. prices at country stations.

The cream trucking system is also closely allied with the assembling of poultry and eggs. In many instances the large creameries also purchase eggs. It is a common practice to find a trucker picking up both eggs and cream on the same truck. In other instances a part of the day is given to the collection of cream and the remainder to gathering poultry or poultry and eggs.

ANALYSIS OF CREAM STATION OPERATION

LOCATION AND MARKET OUTLETS

The area surveyed contained 201 cream stations. Four of these had been started so recently that no reliable information on operation could be obtained. Twenty-four were the set-in type in which the operator did nothing but provide the facilities for assembling the cream.

In Figure 1 and Table 2 the location of the 201 stations and the market destinations of the cream assembled by them are shown. There were 18 churning points that received station cream from this area. Eleven were located within the limits of the area and seven were outside. Those inside were Columbus, on the north edge of the area, Washington C. H., Pickerington, Sardinia, Sabina, Circleville, Groveport, Greenfield, Lancaster, Chillicothe, and Xenia. Those outside were Akron, Union City, London, Cincinnati, Batavia, Greenville, and Springfield.

Columbus was the destination of 50 stations, or 25 per cent of the total. Washington Court House, with 31, and Cincinnati, with 28, had approximately 15 per cent each, and Sardinia, with 24 set-in stations, accounted for 12 per cent. The combined percentage of these four receiving points is 67, or two-thirds of the total.

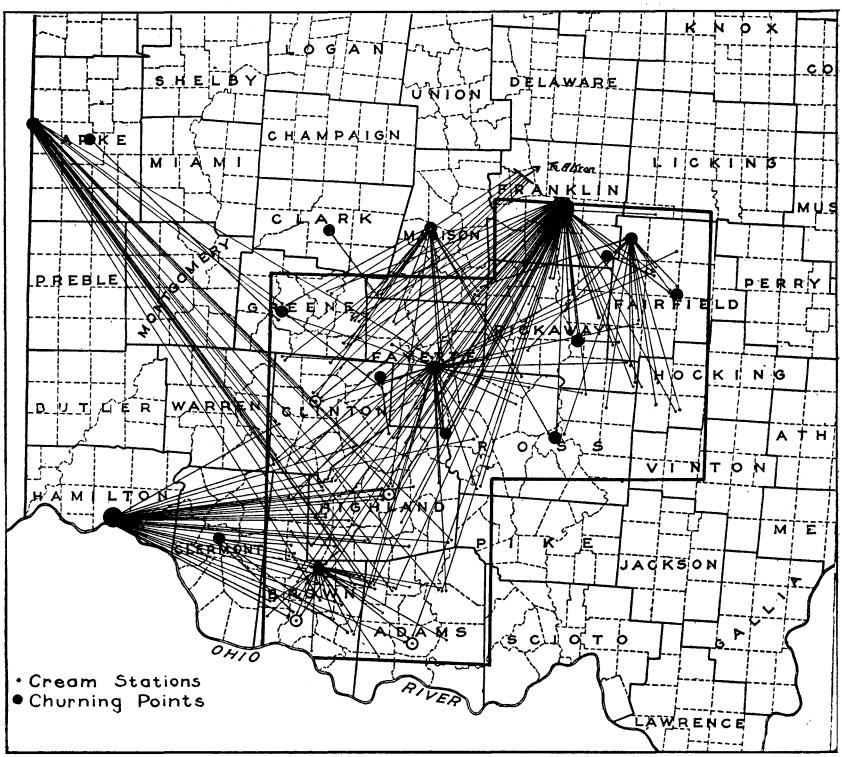

Fig. 1.—Number of cream stations and patrons, by churning points, and average distance of cream stations from churning point

Akron is approximately 185 miles from the center of the group of stations sending cream there. Union City is about 95 miles away and the other three slightly over 50 miles. The stations sending to Cincinnati were confined entirely to counties in the southwest portion of the area—Clinton, Highland, Brown, and Adams. Those going to Columbus were more widely scattered throughout the area than those of any other receiving point.

This picture of the movement of station cream to churning points emphasizes the degree to which the assembling function has passed over to the motor truck. All of this cream, with the exception of that from a single station, moves to the churning point by truck.

IMPORTANCE OF CREAM STATION IN TERMS OF FARMS SELLING

The 1930 Census records the farms reporting cream sold as butterfat in 1929. It was assumed that the distribution of these farms was uniform throughout the various counties. On this basis *pro rata* figures were computed for parts of counties included in the area surveyed.

TABLE 2.—Number of Cream Stations and Patrons, by Churning Points, and Average Distance of Cream Stations from Churning Point

Churning point	Stations in area studied	Patrons	Average distance of stations from churning point (Miles)
Akron	6	227	185
Columbus	50	1756	51
Union City	20	962	95
Cincinnati	28	1186	53
Washington C. H.	31	1069	28
Sardinia	24	679	14
Batavia	4	408	25
London	14	674	32
Pickerington	14	822	35
Xenia	2	440	0
Greenfield	1	38	0
Lancaster	1	25	0
Chillicothe	1	200	0
Sabina	1	28	15
Circleville	1	50	7
Springfield	1	20	20
Greenville	1	90	53
Groveport	1	18	11
Total	201	8692	.....
Average	.....	43	35

The result of this estimate is given in Table 3. It shows a total of 11,746 farms selling cream as butterfat in the area. The number of cream stations by counties is also given. From these figures it is evident that the cream station is much more important as an outlet in some counties than in others. The presence of only one cream station in that part of Franklin County included in

TABLE 3.—Number of Cream Stations and Approximate Number of Farms Reporting Cream Sold as Butterfat in Territory of Study, by Counties for 1929

County	Number of farms selling cream as butterfat	Per cent of county included in study	Estimated number of farms selling butterfat in area studied	Cream stations in area studied
Adams	1619	75	1214	18
Brown	2298	100	2298	37
Clinton	1057	100	1057	22
Fairfield	1830	90	1647	14
Fayette	685	100	685	9
Franklin	524	50	262	1
Greene	501	65	325	15
Highland	1902	100	1902	39
Hocking	695	33⅓	232	5
Licking	1324	5	66	1
Madison	603	10	60	8
Pickaway	1018	100	1018	18
Pike	690	10	69	.....
Ross	945	90	850	14
Vinton	609	10	61	.....
Total	16,300	.....	11,746	201

the study and the presence of 262 farms selling cream indicate that most of these farms are using some other market outlet. The total number of patrons reported by cream stations was 8692. This taken from the total of 11,746 leaves 3054 farms for other outlets.

Each station operator was asked to give the approximate number of patrons selling cream through his station. It is obvious that these figures when compiled will contain some duplication because there are some farmers who sell one week to one station and the next week to another.

The total number of patrons reported for the 197 stations on which this item was given was 8692. The simple average was 44 per station. There were, however, 21 large stations in the area with 150 or more patrons each. A more representative figure for size would be the midpoint or median, which was 28. This means that of these 197 stations there were as many with less than 28 patrons as there were with more than 28.

From these figures it is evident that the typical cream station in this area is not a business of very large earning power. The average volume of sales per farm reporting sales in the 1930 Census for the counties involved in this area was 474 pounds of butterfat. If these 28 cream station patrons were averaged as to volume of sales, the receipts of the station at 2 cents per pound would be $265.44 for the year. The gross receipts of cream stations have declined to the point where it is only in exceptional cases that a station represents the sole income of the operator.

This condition has given an impetus to the growth of the set-in station. This is usually run in connection with a country store or some other small business. It has the advantage to the proprietor of attracting some potential customers to his place of business.

LOSS OF PATRONS BY CREAM STATIONS

In the survey of cream stations each operator was asked whether the development of cream trucking had seriously affected the number of patrons of his station. The answer was almost invariably in the affirmative. In Table 4 the stations are listed in classes based upon the time in operation. Loss of patrons is correlated to some degree with the age of the station. Not all of these losses are due to the inroads of trucks, but this was given by the operators as the one of outstanding importance.

In this connection it was also generally agreed by station operators that the patrons with a larger volume of sales were inclined to be the first to desert the station as a market outlet. This means that the volume and income of the stations have declined to an even greater degree than the decline of patrons.

AGE OF STATION AND NUMBER OF PATRONS

An effort was made to determine whether there was any significant correlation between the number of years the station had been in operation at a given location and the number of patrons. The analysis failed to reveal any significant relationship.

The same test was applied to the length of time that the same operator had been in charge, with practically the same results. The cream procurement managers assert that some patrons will follow a station operator if he shifts to purchasing for another company in the same locality, but there are other competitive factors of more importance in determining the number of patrons to the station.

TABLE 4.—Decline of Patronage of 197 Cream Stations in Area, Including 1932

Age of station (Years)	Number of stations	Highest number of patrons	Loss as reported	Present number of patrons	Patrons per station (Average)	Per cent lost
Less than 1	45	1478	141	1337	30	9.5
1—less than 2	15	790	298	492	33	37.7
2—less than 3	11	874	413	461	42	47.3
3—less than 4	8	630	269	361	45	42.7
4—less than 5	11	831	249	582	53	30.0
5—less than 6	20	1163	347	816	41	29.8
6—less than 7	7	516	265	251	36	51.4
7—less than 8	10	654	216	438	44	33.0
8—less than 9	5	502	122	380	76	24.3
9—less than 10	2	380	235	145	73	61.8
10—less than 11	19	1467	660	807	43	45.0
11—less than 12	9	524	138	386	43	26.3
12—less than 13	6	675	411	264	44	60.9
13—less than 14	5	288	98	190	38	34.0
14—less than 15	6	551	260	291	49	47.2
15—less than 16	8	603	198	405	51	32.8
16—less than 17	3	372	254	118	39	68.3
17—less than 18	.....	.....	.....	.....	.....	.....
18—less than 19	2	328	163	165	83	49.7
19—less than 20	.....	.....	.....	.....	.....	.....
20 and over	5	1277	474	803	161	37.1
Total	197	13,903	5211	8692	44	37.5

LINES OF BUSINESS SUPPLEMENTING CREAM STATION OPERATION

Of the 201 station operators interviewed there were 61 in which no other line of business was given as supplementing the income from the station. This does not mean that in all these cases the cream station was the sole source of income of the operator. In several instances the cream station was operated by a housewife and the business of the husband was not considered as supplementary to the station.

A tabulation of the replies of operators indicates that there were 28 distinct lines of business mentioned as being run in connection with the cream stations. The purchase and handling of poultry and eggs were more frequently combined with cream station operation than was the case with any other commodity. There were 34 stations that handled poultry and eggs and 10 that dealt in eggs only. The country store, either general or grocery, was the line of business that occurred most often in connection with cream buying. There was one combination with a retail meat market. It would be better to say in most cases that cream buying was just one of the lines of business of the country store.

The operation of a cream truck route in connection with the station was also quite common. There were 25 cases of this combination. When these two methods of assembling cream were combined, they were frequently the sole business of the operator.

There was a wide variety in the remaining lines of associated business. The following lines were given, but no one of them applied to as many as five stations: Post office, filling station, garage, milk plant, restaurant, school bus, confectionery, shoe shop, radio repair, wholesale ice cream, hotel, hatchery, bakery, auto licenses, painting, and huckster.

TENURE OF STATION OPERATORS

The stations were classified upon the basis of the length of time they had been operating under the same operator. The result of this analysis is given in Table 5.

TABLE 5.—Tenure of Operator of 201 Cream Stations in the Area Studied

Years	Number of operators	Per cent of total	Years	Number of operators	Per cent of total
Less than 1	55	27.3	11 and less than 12	11	5.5
1 and less than 2	22	10.9	12 and less than 13	4	2.0
2 and less than 3	16	7.9	13 and less than 14	5	2.5
3 and less than 4	12	6.0	14 and less than 15	2	1.0
4 and less than 5	12	6.0	15 and less than 16	3	1.5
5 and less than 6	16	7.9	16 and less than 17	2	1.0
6 and less than 7	8	4.0	17 and less than 18	0	0
7 and less than 8	10	5.0	18 and less than 19	0	0
8 and less than 9	6	3.0	19 and less than 20	0	0
9 and less than 10	6	3.0	Over 20	3	1.5
10 and less than 11	8	4.0	Total	201	100.0

THE OPERATION OF CREAM TRUCK ROUTES

SCOPE OF THE TRUCKING STUDY

The aim of this phase of the study was to obtain data showing the nature of cream trucking from farms in this area. In many instances the owner of the truck was also the driver. In those cases where he was not, an effort was made to interview both the owner and the driver. Information was collected upon the weight, make, and type of truck in use, the character and size of loads, and the miles traveled. Truckers were asked to express their opinion as to weaknesses in the system and to suggest changes and improvements.

EXTENSION OF IMPROVED ROAD MILEAGE

The types of roads and percentage of each for the 3 years 1918, 1926, and 1932 are given in Table 6 for the 14 counties in which cream trucking operations were studied. Roads for this purpose were classified as (a) hard surfaced, (b) stone and gravel, and (c) earth. Macadam roads were classed as hard surfaced. There was a reduction of about 31 per cent in dirt-road mileage from 1918 to 1932 and a corresponding increase in hard-surfaced and stone and gravel roads. The total mileage of improved roads increased from 6504.6

TABLE 6.—Type of Roads in 14 Counties of the Area Studied for 1918, 1926, and 1932

Source—County Surveyors' Records

Type of road	Miles			Per cent		
	1918	1926	Jan. 1, 1932	1918	1926	Jan. 1, 1932
Hard surfaced	665.40	1,605.96	1,620.36	5.27	12.46	12.55
Stone and gravel	5,839.20	5,981.63	7,058.33	46.22	46.39	54.67
Earth	6,127.70	5,306.49	4,231.84	48.51	41.15	32.78
Total	12,632.30	12,894.08	12,910.53	100.00	100.00	100.00

in 1918 to 8678.69 in 1932 in these 14 counties. The large increase in improved roads from 1918 to 1926 was in the hard-surfaced type; whereas the increase from 1926 to 1932 was in the stone and gravel types.

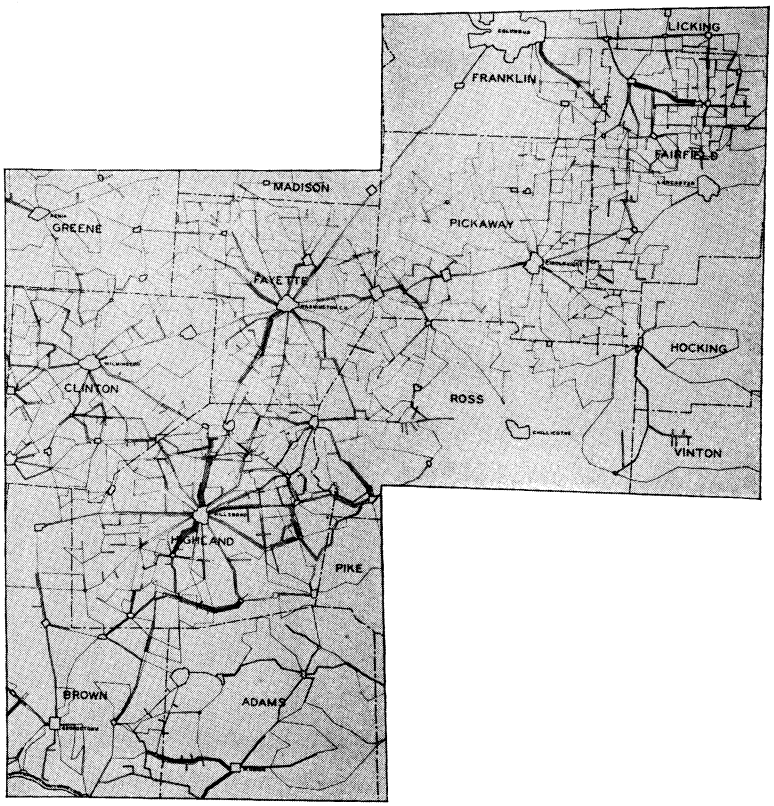

Fig. 2.—Cream truck routes in an area of southwestern Ohio, 1932

This very marked improvement in roads has a direct bearing on the amount of cream trucking done. It can be seen clearly in the amount of driving actually done on earth roads. While there were still 4232 miles of earth roads in these 14 counties in 1932, or 32.78 per cent of the total mileage, only 63 miles, or one per cent, of the cream pick-up routes were on earth roads. According to the 1930 Census there were still 6433 farms, or 21 per cent, on earth roads in the 14 counties. With a pick-up from farms on earth roads by cream trucks of only one per cent, it is obvious that this method of marketing offers little opportunity to the farmer situated on an earth road.

The classification of roads as to types by counties and the total road mileage included in the area studied are given in Table 7. In Table 8 the miles of roads covered by cream trucks, with overlapping eliminated, are listed by counties. Of the total 8417 miles of roads of all kinds within the boundaries of the area, there were cream trucks covering 2881 miles, or 34 per cent.

TABLE 7.—Total Road Mileage and Approximate Mileage Included in Area of Study, by County and by Type (January 1, 1932)

County	Hard surface	Stone and gravel	Earth	Total	Per cent and miles of roads in area studied	
					Per cent	Miles
Adams	62	393	623	1078	75	808
Brown	75	343	614	1032	100	1032
Clinton	56	646	31	733	100	733
Fairfield	76	729	200	1005	75	753
Fayette	126	511	12	649	100	649
Franklin	660	219	121	1000	33⅓	333
Greene	169	536	30	735	80	588
Highland	137	666	329	1132	100	1132
Hocking	38	178	799	1015	33⅓	338
Madison	59	545	8	612	10	61
Pickaway	60	748	.....	808	100	808
Pike	12	635	523	1170	10	117
Ross	53	709	329	1091	90	980
Vinton	36	201	614	851	10	85
Total	1619	7059	4233	12911	.....	8417

TABLE 8.—Summary of Road Mileage and Mileage Traveled by Cream Trucks in Area Studied

County	Road mileage in the area (Miles)	Covered by cream trucks (Miles)	Per cent covered
Adams	808	188	23
Brown	1032	223	22
Clinton	733	353	48
Fairfield	753	316	42
Fayette	649	350	54
Franklin	333	53	16
Greene	588	141	24
Highland	1132	550	49
Hocking	338	46	14
Madison	61	26	43
Pickaway	808	363	45
Pike	117	20	17
Ross	980	220	22
Vinton	85	32	38
Total	8417	2881	34

This should not be construed as meaning that the shift to cream trucking is but one-third completed in this area. Each addition to the mileage now covered might tend toward diminishing returns to the truck operators if it were necessary to cover territory with little production of cream or with roads of poor type.

MOTOR TRUCK REGISTRATION

Truck registration by counties is available from 1923 to date. In Table 9 is shown an increase each year up to 1929 and then a falling off each year, until in 1932 the registrations in these 14 counties had fallen off 16.1 per cent. In the same period the fall-off in total state registrations amounted to 18.3 per cent. The drop was evidently due to factors other than roads.

TABLE 9.—Total Truck Registration in 14 Counties of the Area Studied, 1923-1932

Source—Bureau of Motor Vehicles

County	1923	1924	1925	1926	1927	1928	1929	1930	1931	1932
Adams	196	215	228	278	344	385	520	465	472	455
Brown	247	318	350	386	455	479	569	547	547	477
Clinton	461	496	571	647	770	813	867	821	848	735
Fairfield	979	1,138	1,256	1,390	1,495	1,502	1,590	1,534	1,459	1,323
Fayette	579	626	653	766	846	884	798	867	788	701
Franklin	8,203	9,048	9,408	10,357	10,935	10,859	11,268	10,958	10,513	9,403
Greene	872	1,008	1,081	1,149	1,212	1,223	1,279	1,260	1,142	972
Highland	522	641	699	770	885	875	893	917	881	765
Hocking	452	490	542	577	632	635	598	584	522	492
Madison	443	526	572	683	753	758	801	806	760	662
Pickaway	656	715	822	932	1,074	1,033	1,089	1,102	1,046	901
Pike	171	235	227	283	319	332	372	380	305	289
Ross	955	1,066	1,161	1,237	1,405	1,390	1,477	1,492	1,441	1,354
Vinton	84	109	129	148	174	204	235	266	267	239
14 counties	14,820	16,631	17,699	19,603	21,299	21,372	22,356	21,999	20,991	18,768
Per cent of State	10.5	10.4	10.3	10.6	10.8	10.8	10.8	10.8	10.9	11.1
State	140,330	159,513	171,682	184,834	196,332	198,705	206,574	204,353	192,029	168,909

These registration figures show much the same increase as do the figures on road development. The 14 counties have shown a very gradual increase in the percentage of all truck registrations of the State. In 1923 this area had 10.5 per cent of the state total, which had increased to 11.1 per cent in 1932.

Franklin is the only county of the 14 with predominant urban population, and the registration of trucks shows up somewhat differently than in the other 13 counties. In 1923 Franklin County had 55 per cent of all trucks in the 14 counties. At the peak of truck registration in 1929 it had 50 per cent and in 1932, 50 per cent. Road development in the more strictly rural counties came later than in the urban counties, which accounts for the greater increase in truck registrations in the rural counties from 1923 to 1932. This growth had taken place in Franklin County before it did in the other 13 counties.

MILEAGE AND FARM PICK-UPS

The cream truck route is divided into two parts—that part over which cream is being picked up and that part which it is necessary to cover from the starting point to the pick-up area and from the last pick-up to the destination. Complete records were compiled on 67 trucks operating on cream routes. The mileage was computed for the full routes from starting point to destination and also for those sections of the routes in which farm pick-ups were being made. A summarization is given in Table 10.

TABLE 10.—Mileage and Farm Pick-ups of 67 Trucks Operating 127 Cream Routes in 1932 in the Area Studied

	Full route mileage	Pick-up mileage	Farm pick-ups
Total for 67 trucks on 127 routes	10,234.0	7031.0	3831.0
Average per truck	152.7	104.9	57.2
Average per pick-up	2.7	1.8	.....
Average per route	80.6	55.4	30.2

These figures represent the mileage involved in one complete collection of cream and its delivery to destination. In this area there are approximately 74 gatherings of cream in a year. The total truck mileage of the full routes for a year would be approximately 750,000 miles, or the equivalent of 30 times around the earth.

On the average each one of these trucks gathered the cream from 57 farms; the average per route was only 30. The mileage per pick-up, counting the full trip, was 2.7 and for the pick-up sections, 1.8. It can readily be seen that nothing but trucks of small size and marked economy of operation could be used to pick up these small quantities of cream at farms so widely scattered.

The records show that all operators did not depend wholly upon the returns from cream hauling. From 33 of the truckers data were secured on the total number of miles of driving for the truck. The sum of all mileage for this group was 1,003,500 miles, but the mileage devoted to cream gathering and hauling was only 312,552 miles. Less than one-third of their total truck mileage was made on cream routes.

A wide variation was found in types of routes: Some were compact, gathered cream only, and had a low mileage per pick-up; others were spread out over a wide area and involved much more driving per cream pick-up.

Three factors determine largely the amount of driving to the pick-up. They are (1) the number of farms per square mile with cream for sale, (2) the intensity of truck competition in the area covered, and (3) the relative importance of cream in the list of commodities handled by the trucker. Some trucks do mainly a general produce business and pick up cream more or less as a side line.

Records with respect to mileage and pick-ups were obtained from 67 trucks operating on 123 routes. These routes were sorted into groups based upon the miles covered in the part of the route in which pick-ups were made. The summary is given in Table 11.

TABLE 11.—Number of Routes and Number of Pick-ups, by Length of Pick-up Route, for 67 Trucks Operating on 123 Routes in 1932

Length of pick-up routes (Miles)	Number of routes	Number of pick-ups	Average number of pick-ups per route
Under 15	3	50	17.3
15— 24	11	160	14.5
25— 34	13	206	15.8
35— 44	17	422	24.8
45— 54	35	943	26.9
55— 64	16	555	34.7
65— 74	14	862	61.6
75— 94	4	168	42.0
95—114	3	141	47.0
115—134	3	139	46.3
Over 134	4	145	38.3
Total	123	3791	30.8

There was a wide range in the number of pick-ups per route as shown in Table 12. On 13 routes there were less than 10 cream pick-ups and on 39 routes, less than 20. Not all of these routes can be classed as cream routes, as on most of them cream was picked up along with other produce and in many instances constituted a small percentage of the load. These 39 routes made only 11.3 per cent of the pick-ups of the 124 routes. Thirty-six routes had 40 or more pick-ups per route and accounted for 56.2 per cent of the total.

TABLE 12.—Cream Routes, Classified on Number of Farm Pick-ups per Route

Number of pick-ups	Number of routes	Total pick-ups for group	Per cent of total pick-ups	Cumulative per cent
Under 10	13	83	2.2	2.2
10—19	26	349	9.1	11.3
20—29	36	815	21.3	32.6
30—39	13	429	11.2	43.8
40—49	7	295	7.7	51.5
50—59	7	350	9.1	60.6
60—69	11	698	18.2	78.8
Over 69	11	812	21.2	100.0
Total	124	3831	100.0	.....

The number of pick-ups per truck is not so important a figure as the number per route. This is true because any one truck might have what appears to be a sufficient number of pick-ups to be efficient but they may come from several routes, none of which would necessarily be efficient routes. One-third of the trucks pick up cream from 2484 farms, or 64.8 per cent of the total farm pick-ups of the 67 trucks.

Probably the most accurate method of determining the efficiency of routes is by the average distance driven for each cream pick-up. This is shown in Table 13. Many cream truckers do more than half of their driving from the last stop to the creamery. Other routes are built around the territory in which the creamery is located, and there is no driving to do after the load is picked up. These latter routes are bound to be the more efficient unless some conditions other than driving cause the difference.

TABLE 13.—Miles Driven per Farm Pick-up by Truck and by Route on Full Routes and on Pick-up Routes by 65 Trucks in an Area of Southwestern Ohio, 1932

Miles per pick-up	Number of routes		Number of trucks	
	Pick-up	Full	On pick-up routes	On full routes
Under 1.00	22	13	12	6
1.00—1.49	20	13	12	5
1.50—1.99	16	8	9	5
2.00—2.49	29	17	11	7
2.50—2.99	11	19	5	8
3.00—3.99	7	15	7	10
Over 3.99	18	38	9	24
Total	123	123	65	65
Average	1.835	2.671	....	.....

Twenty-two routes had a driving distance per farm stop of less than one mile on the pick-up distance, and 13 of these had less than this distance on the full route. Most of those routes with more than 3 miles of driving per stop were those previously mentioned in which cream made up only part of the load.

The average driving per stop on all pick-up routes was 1.835 miles and on full routes was 2.671 miles. This means that each stop must pay for all expense involved in 2.671 miles of driving in order that cream trucking as a whole will return a profit from this area.

WEIGHT OF LOADS AND TON MILES OF CREAM HAULING

A tabulation of weight of load is given in Table 14. Only nine trucks had loads of cream alone of one ton or over; whereas 28 trucks had total loads, can weight included, of one ton or more. The average weight of total load for the 66 trucks for which data are given was 1900 pounds and of cream alone, 1300 pounds. However, this does not take into account the weight of other produce picked up on the routes. Since over half of the routes picked up some produce (mostly eggs), the average load weights would be somewhat higher.

TABLE 14.—Average Weight of Load by Route and by Truck, for 66 Trucks Hauling Cream from an Area of Southwestern Ohio, 1932

Weight of load (Pounds)	Number of trucks		Number of routes	
	Cream only	Total load	Cream only	Total load
Under 500	16	10	35	22
500— 999	17	9	30	18
1000—1499	12	13	22	27
1500—1999	12	6	20	7
2000—2499	1	11	3	19
2500—2999	2	8	4	14
3000—3499	4	2	10	4
3500—3999	1	0	1	0
Over 3999	1	7	1	15
Total	66	66	126	126

A frequency distribution is set up in Table 15, showing the weight of loads, the number of trucks, and the total mileage traveled per year with a cream load. This table does not include the return driving with empty cans. The "miles driven with load" is half of the distance driven on the pick-up route plus the distance the truck must travel with the load from the last pick-up to the creamery or destination. Data are given for both full loads and cream weight only.

TABLE 15.—Classification of 66 Trucks, on Basis of Weight of Load and Miles Traveled with Load, Hauling Cream from an Area of Southwestern Ohio, 1932

Average load weight (Pounds)	Number of trucks	Miles traveled per year with load						
		0–2499	2500–4999	5000–7499	7500–9999	10,000–12,499	12,500–14,999	Over 14,999
Total load (Cream and cans)								
0— 999	19	10	3	3	3	.....	.....	.....
1000—1999	19	2	6	7	2	2	.....	.....
2000—2999	19	5	2	5	6	1	.....	.....
3000—3999	2	.....	.....	1	1	.....	.....	.....
4000—4999	5	.....	.....	3	1	.....	.....	1
Over 4999	2	.....	1	.....	.....	.....	.....	1
Total	66	17	12	19	13	3	0	2
Cream only								
0— 999	33	11	7	9	4	2	.....	.....
1000—1999	24	6	4	6	7	1	.....	.....
2000—2999	3	.....	.....	1	1	.....	.....	1
3000—3999	5	.....	1	3	1	.....	.....	.....
4000—4999	.....	.....	.....	.....	.....	.....	.....	.....
Over 4999	1	.....	.....	.....	.....	.....	.....	1
Total	66	17	12	19	13	3	0	2

Table 16 gives a frequency distribution of trucks based upon ton miles of cream hauled. On the 66 trucks the total ton mileage for 1932 was estimated at 318,646 and the average, 4,828 per truck.

TABLE 16.—Classification of 66 Trucks on Basis of Ton Miles of Cream Hauled per Year from an Area of Southwestern Ohio

Ton miles	Number of trucks	Per cent of trucks
Under 5,000	49	74.3
5,000— 9,999	12	18.2
10,000—14,999	2	3.0
15,000—19,999	1	1.5
20,000—24,999	....	.....
25,000—29,999	.....	.....
30,000—34,999	1	1.5
35,000—39,999	.....	.....
Over 39,999	1	1.5
Total	66	100.0

TYPES AND COMMERCIAL STATUS OF CREAM TRUCKS

Trucks used in cream hauling in this area were almost exclusively of one and 1½ ton sizes. The distribution of the 67 trucks by sizes is given in Table 17. The 3-ton truck was engaged in milk hauling and picked up cream incidentally.

TABLE 17.—Sizes of Trucks Used in Cream Hauling in Area Studied

Size in ton capacity	Number of trucks	Per cent	Cumulative per cent
Auto with truck bed	4	6.0	6
½ ton	4	6.0	12
¾ ton	2	3.0	15
1 ton	11	16.0	31
1¼ ton	1	1.5	32.5
1½ ton	44	66.0	98.5
3 ton	1	1.5	100.0
Total	67	100.0	.....

For weight of truck without load the distribution is given in Table 18. The weighted average of the group was 3935 pounds. Only three of the trucks weighed over 5000 pounds, and 71 per cent were between 3500 and 5000.

TABLE 18.—Weight of Trucks Used in Cream Hauling in Area Studied, 1932

Weight (Pounds)	Number of trucks	Per cent of trucks	Cumulative per cent
1500—1999	2	2.9	2.9
2000—2499	3	4.4	7.3
2500—2999	6	8.8	16.1
3000—3499	6	8.8	24.9
3500—3999	13	19.1	44.0
4000—4499	26	38.3	82.3
4500—4999	9	13.3	95.6
Over 4999	3	4.4	100.0
Total	68	100.0	.....

Transportation of cream is done almost exclusively by light trucks. This is made necessary from the fact that the distance driven in relation to the amount of products handled is so great. In most instances anything over 50 stops required the most of a day and well over 100 miles of driving for the

entire route. Since the average total load weight was slightly less than a ton, it can readily be seen that the most popular type of truck for cream hauling would be the lighter models.

Of the 68 trucks 57 were small, popular-priced trucks, while seven were large trucks of higher priced makes. Three small trucks were made from passenger cars remodeled as trucks, and one passenger car was used to pick up cream.

Only 14 per cent of the trucks was over 4 years old, and 60 per cent was less than 2 years old. There are two reasons which may account for the fact that there are very few old trucks in use in cream hauling. One is the fact that the average distance driven per year is so high. Not only is the distance driven per year on the cream route rather high, but these light trucks are suitable for much other light hauling which requires small loads and comparatively long drives. The average driving for 33 trucks on cream routes was 9471 miles per truck, while their total mileage for the year averaged 30,409 miles per truck. The second reason is that many of the truckers in cream hauling are men who have purchased trucks and started in cream trucking with the first truck purchased. Twenty-nine truckers started within the last 2 or 3 years and most of them started with new trucks. The data on make and age of trucks are given in Table 19.

TABLE 19.—Age of Trucks Used for Cream Hauling in an Area of Southwestern Ohio, 1932

Time in use	Number	Per cent	Cumulative per cent
Less than 1 year	14	21.5	21.5
1—2 years	25	38.5	60.0
2—3 years	8	12.3	72.3
3—4 years	9	13.9	86.2
4—5 years	5	7.7	93.9
5—6 years	2	3.1	97.0
6—7 years	1	1.5	98.5
7—8 years	1	1.5	100.0
Total	65*	100.0	

*No record on three trucks.

These trucks vary on the basis of operation. Data were secured on 64 of them, making possible the classification given in Table 20.

TABLE 20.—Basis of Operation of 64 Trucks Included in Study, 1932

Type of operation	Number of trucks
Cooperative or company owner or controlled without P. U. C. O. license	20
Contract and custom hauling without P. U. C. O. license	19
Contract without P. U. C. O. license	15
Contract with P. U. C. O. license	10
Total	64

The first classification includes those trucks owned or controlled by cooperative associations or creamery companies. Their operations were not devoted exclusively to the hauling of cream in all cases. The second included trucks under contract but engaged partly in custom hauling, in addition to

gathering cream. The third group was made up strictly of contract operators. The fourth group was on contract to haul cream but also operated as common carriers under P. U. C. O. licenses. Two of the contract trucks, one with and one without a P. U. C. O. license, were used part of the time on farms.

FLOOR SPACE OF TRUCKS

Seven trucks had less than 25 square feet of floor space, but only one or two of these picked up much cream and then only on very short routes. There was no one size of bed which might be called standard size, but most of the 1½-ton trucks had beds with floor space of from 55 to 85 square feet. The average floor space of the 67 trucks was 60.8 square feet. This gives room for approximately 50 to 60 cans of 5-gallon capacity, depending on the shape of the bed. Table 21 classifies the trucks by floor space.

TABLE 21.—Square Feet of Can Space of 67 Trucks Hauling Cream from an Area of Southwestern Ohio

Square feet of can space	Number of trucks	Per cent of trucks
Under 25	7	10.4
25—34.9	3	4.5
35—44.9	6	9.0
45—54.9	6	9.0
55—64.9	10	14.9
65—74.9	13	19.4
75—84.9	19	28.3
Over 84.9	3	4.5
Total	67	100.0

MILES DRIVEN AND PROBABLE MILES FOR TRUCKS

Information was obtained on 45 trucks as to the miles the truck had been driven and the miles which the truck probably would be driven until traded or discarded. This information is given in Table 22. There is little reason for saying that there should be much relation between these two figures. However, there is some slight relationship in the two extreme classes. A few truckers made a rule of purchasing a new truck before the old one needed much repair. The group of trucks which had been driven less than 10,000 miles

TABLE 22.—Number of Trucks, Average Miles Driven, and Average Probable Miles, by Class, for 45 Trucks Hauling Cream in an Area of Southwestern Ohio

Miles driven	Number of trucks	Average miles per truck	Average probable miles per truck
Under 10,000	4	6,025	52,500
10,000—19,999	9	15,333	73,888
20,000—29,999	6	26,333	69,166
30,000—39,999	8	34,000	72,500
40,000—49,999	7	42,285	65,000
Over 49,999	11	65,000	82,727
Total	45	.....	.....
Average (wt.)	.....	35,625	71,888

would therefore include more trucks of owners who trade or purchase more often. Likewise, the group of trucks which had been driven over 50,000 miles would include more trucks of owners who drove them until the cars were practically worn out. The probable mileage of the intermediate classes shows very little variation.

These 45 trucks had been driven an average of 35,625 miles per truck, and the average probable miles per truck as stated by owners were 71,888. In other words, the 45 trucks as a whole had been driven almost exactly one-half of their probable life by the present owners.

INFORMATION ON TRUCK OWNERS

The 67 trucks used in cream hauling in this area in 1932, on which information was obtained, were owned by 53 individuals. Of these owners 44 lived in the city or village and nine in the country.

Table 23 gives the other businesses in which these truckers were engaged. Almost all trucks hauling cream were used in some other hauling, over half of them doing general hauling. Many of the cream truckers engaged in more than one business in addition to cream gathering by truck. Two examples of such combinations are: (a) cream hauling, milk route, and farming; and (b) cream hauling, cream station, and dealing in produce.

TABLE 23.—Other Businesses Engaged in by Cream Truckers in an Area of Southwestern Ohio, 1932

Business	Number of truckers engaged	Per cent of total truckers
General hauling	27	51
Cream station	9	17
Milk route	9	17
Creamery	7	13
Produce dealer	7	13
Farming	6	11
Store	3	6
Clerk in store	2	4
Filling station	1	2
Garage	1	2
Marketing cooperative	1	2
Miscellaneous	3	6
No information	1	2

Of the 53 truck owners interviewed, 29 started trucking cream with the first truck they purchased. The number of trucks bought by these truckers since they first started to truck is given in Table 24. At least 26 of these men have owned less than four trucks. Only one trucker had been hauling cream for as long as 10 years, and all but seven from whom information was obtained had started in the last 5 years. These data are given in detail in Table 25. This is an indication of the rapidity of the recent development in cream trucking in this area.

All truckers interviewed were asked what they were doing before they started to haul cream. Ten of them had been farming, six had been doing general trucking, three had started cream trucking as their first occupation, and two had been working in factories. In all there were 21 occupations in which this group had been engaged before hauling cream. The question was also asked as to what induced them to start cream trucking. In five cases the

trucker had been induced by the creamery to start a route, but most of the answers indicated that cream trucking looked attractive in comparison to most other occupations open to them.

TABLE 24.—Total Number of Trucks Purchased by Truckers now Hauling Cream in an Area of Southwestern Ohio

Number of trucks	Number of truckers	Per cent of truckers	Cumulative per cent
1	8	15.1	15.1
2	8	15.1	30.2
3	10	18.8	49.0
4	2	3.8	52.8
5	2	3.8	56.6
6	5	9.4	66.0
7	1	1.9	67.9
8	2	3.8	71.7
15	2	3.8	75.5
20	1	1.9	77.4
No information	12	22.6	100.0
Total	53	100.0	

Nearly all routes were built by the truckers themselves by solicitation. In three cases the creamery had field men who had built up the routes. Three routes were bought by the trucker, and three others were acquired routes already built up but for which no price was paid. Routes had been comparatively easy to build up in the beginning because the creameries paid anywhere from one to 4 cents more per pound for butterfat on routes than in stations. This differential, however, has been reduced considerably in most cases.

TABLE 25.—Cream Truckers in an Area of Southwestern Ohio in 1932, Classified on Basis of the Year in which They Started Hauling Cream

Year starting	Number of truckers	Year starting	Number of truckers
1932	5	1926	3
1931	7	1925	2
1930	4	1923	1
1929	5	1922	1
1928	7	No information	12
1927	6		

The question asking for suggestions on how to make trucking conditions better for the trucker brought out some interesting opinions. Of the 29 replies, 15 expressed the opinion that hauling rates were not much too low. These truckers felt that better routes and less intensive competition on certain roads would greatly improve the situation. These suggestions are summarized in Table 26.

TABLE 26.—Suggestions of Truckers to Better Trucking Conditions for Themselves, with the Number of Truckers Suggesting Each

Suggestion or change	Number of truckers	Suggestion or change	Number of truckers
Higher rates	3	Higher rates or better routes	1
Better routes	8	Better rates—more fair competition	1
Fewer trucks on roads	1	Limit number of trucks	1
P. U. C. O. required for all	2	Fewer trucks—better loads	4
Better prices to farmers	7	Standard rates for hauling	1

Only three said definitely that higher rates would better the conditions to any great extent. Seven replies indicated that the best thing that could happen for the good of the trucker would be an increase in price to the farmer so that he could afford to pay more for the hauling and would also produce more butterfat.

Of the 53 truckers, 37 indicated they expected to continue in the trucking business when conditions get better and none indicated that they expected to quit.

GROSS RECEIPTS AND RATES

Data were available on 45 truckers, operating 56 trucks, from which to arrive at a reliable figure on their cream trucking receipts per week from routes on which cream was an important item. These data are given in Table 27. The average for all 45 truckers was $27.11 per week, an average of 7.9 cents per mile, or 79 cents per hour for truck and driver. The range in weekly receipts from cream trucking was from about $2 to $100. The range in the cream trucking receipts per mile was ½ cent to 18½ cents, and the range for the receipts per hour was from 10½ cents to $1.50.

TABLE 27.—Cream Trucking Receipts per Week, Number of Hours (Estimated) per Week Required, and Number of Trucks Used for 45 Cream Haulers in an Area of Southwestern Ohio

Receipts per week (Dollars)	Number of truckers	Number of trucks	Average number of hours required	Average miles driven per week	Actual average receipts for group (Dollars)	Receipts per mile (Cents)	Receipts per hour (Dollars)
10.00 or less	10	13	25.0	311	5.50	1.8	0.22
10.01—20.00	10	10	22.3	265	16.10	6.1	0.72
20.01—30.00	13	15	29.4	260	25.38	9.8	0.86
30.01—40.00	1	1	50.0	460	40.00	8.7	0.80
40.01—50.00	6	7	41.5	374	45.67	12.2	1.10
Over 50.00	5	10	79.0	730	72.00	9.1	0.99
Total	45*	56	.....	.....	.....	.....	.....
Average	.....	.....	34.2	344	27.11	7.9	0.79

*No estimate was made on the receipts from trucking cream when there was no charge made for hauling, such as occurs when the creamery or association operates trucks.

The reason for the great variance in the receipts per week, mile, and hour was that most of the truckers with the lower receipts hauled cream along with other products. Their total trucking receipts might compare favorably with the others.

Table 28 has been set up including only those truckers who had routes on which only cream was hauled. The weekly receipts in this table do not necessarily represent the entire trucking receipts of the truckers but show a true picture of the receipts derived from cream hauling. This shows much less variation in receipts per mile and per hour but still shows the truckers with the higher receipts to be receiving the better receipts per mile of driving. The average return per mile of driving was 10.8 cents. If the driver's time is figured at 40 cents per hour and subtracted from the total receipts per mile it leaves 6.8 cents per mile for all the expenses of the truck, including depreciation.

The difference in the receipts per mile of driving cannot be justified on the grounds of different sizes of trucks since the trucks were of about the same size. The most important factor in determining the receipts per mile and per hour was the number of miles driven per pick-up.

TABLE 28.—Trucking Receipts from Strictly Cream Routes, Number of Hours (Estimated) per Week Required, and Number of Trucks Used for 30 Cream Haulers in an Area of Southwestern Ohio, 1932

Receipts per week (Dollars)	Number of truckers	Number of trucks	Average number of hours required	Average miles driven per week	Actual average receipts for group (Dollars)	Receipts per mile (Cents)	Receipts per hour (Dollars)
10.00 and less	3	3	6.3	110	5.66	5.1	0.90
10.01—20.00	8	8	18.5	218	16.37	7.5	0.88
20.01—30.00	7	7	22.1	247	25.00	10.1	1.13
30.01—40.00	1	1	50.0	460	40.00	8.7	0.80
40.01—50.00	6	7	41.5	374	45.67	12.2	1.10
Over 50.00	5	10	79.0	730	91.00	12.5	1.15
Total	30	36	.....	.....	.....	.....	.....
Average	.....	.....	33.9	339	36.57	10.8	1.08

In answer to the question "Are you able, on present rates, to save enough to purchase a new truck when your present one wears out?", 21 indicated that they would be able, 14 indicated that they would not be able to purchase a new truck, and two were not sure.

SUMMARY AND CONCLUSIONS

The study is an analysis of methods of assembling cream for manufacture into butter in an area of southwestern Ohio, with special emphasis upon cream stations and truck routes. Railroad records of 1898 reveal that at that date cream was hauled to a large extent on railroads. Cream movement by railroad had practically disappeared in the area at the time of this study.

Three systems of assembling cream were in effect: (a) direct shipment; (b) cream stations; and (c) cream truck routes. This classification referred to the method of assembling with the farm as the starting point. Direct shipment of cream was of small importance in this area. The means used were direct delivery by the farmer to the plant or shipment by rail or common carrier truck.

There were 201 cream stations in the area showing a total of 8692 patrons reported by the operators—an average of 43 patrons per station. Some overlapping of patrons occurred among stations, and it is therefore evident that the figure of total station patrons is slightly higher than the actual number of farms selling to cream stations. Using Census data as the base, an estimate of 11,746 was arrived at for the number of farms selling cream as butterfat in this area.

The operators of 197 of the 201 stations which had been in business long enough to note a trend in business reported a loss of patrons amounting to 37.5 per cent from the highest number. The average loss of patrons is probably less than this since the high point in number of patrons did not come at the same time for all stations. The operators were almost unanimous in saying that the loss of patrons was serious because the first patrons to desert the stations were the larger producers. In most cases the loss was blamed on the inroads of the truck, but some blame was placed on the whole milk industry for taking the larger cream producers.

The cream from these stations was received by plants at 18 churning points—11 within the area and seven outside. The churning point receiving from the largest number of stations was Columbus, where cream from 50 stations was received. Several of the churning points received cream from only one station within the area studied.

Over two-thirds of the cream stations were run by operators who had some other business to supplement the income from the cream station. One-half of the stations had less than 28 patrons and one-half had more than 28 patrons. The average yearly sales (derived from the Census) of the farms in this area were 474 pounds of butterfat per year. Most of the station operators received 2 cents per pound of butterfat for their commission. This gave the station operator with 28 patrons only $265.44 in commissions from cream per year. One-half of the station operators therefore had less than this amount in gross receipts. Thus, it is easy to see why the station operator was usually engaged in some other business in connection with the station. Poultry or eggs or both were handled by 44 stations. It was also a very common practice for the station to be run as a side line to a country store of some kind.

The area surveyed included 8417 miles of road, of which 2881 miles were covered by cream trucks. Roads in this area have undergone steady improvement until in 1932 only 32.78 per cent of the mileage was earth. Twenty-one per cent of the farms in the area was on earth roads but only one per cent of the cream truck pick-ups was from farms on earth roads. This shows clearly the relation of good roads to the development of cream trucking.

The average miles of travel per farm pick-up of cream for the full route from starting point to final destination was 2.7 miles. For the travel over the routes where cream was being picked up it was 1.8 miles. In some cases the truck picked up other produce on the route, and in other cases the truck picked up cream from stations along the route and delivered it to the churning point. Complete records on 33 truckers showed that less than one-third of their yearly driving was devoted to the trucking of cream.

Of the 127 routes there were 36 with 40 or more pick-ups, which accounted for 56.2 per cent of the total. The total of 3831 farm pick-ups was made by 67 trucks with an average of 57.2 per truck. One-third of the trucks made two-thirds of the pick-ups.

The trucks used were almost entirely of the smaller types and carried loads of small weight. The average weight of these trucks was 3935 pounds and the average total load about 1900 pounds, of which 1300 pounds was cream. Due to the long distances driven annually on cream routes and other trucking, the trucks must be replaced frequently. Only 40 per cent of the trucks was over 2 years old. The trucks in use at the time of the study had been driven an average of 35,635 miles, and the estimates of the owners indicated that the trucks would be traded in at an average of 71,146 miles.

A wide variety of type of operation prevailed. Some trucks were owned by cooperative associations or butter companies; most were operated by commercial haulers on a contract basis, either with or without Public Utilities Commission license.

The gross receipts per week per trucker from cream trucking in this area ranged from $2 to almost $100, with an average of $27.11. The receipts obtained from cream hauling in many instances were not sufficient to keep the operator in business without combining it with some other business or other use of the truck.

Cream assembling by truck and by station as now done must necessarily be in connection with some other business. The competition for the cream and the competition for what income is afforded in assembling it have been responsible for the small volume which it is possible for any one station or trucker to obtain. In many instances several trucks gathering cream from the farm traveled the same road on pick-up routes. Some small towns had as high as five or more cream stations, and two or three trucks were also picking up cream from the same territory from which the stations were drawing their business.

This page intentionally blank.

This page intentionally blank.